# Type I and II Ground Disturbing Categorical Exclusion Action Classification Form

STIP Project No.	B-4636
WBS Element	38447.1.FS2
Federal Project No.	N/A

## A. Project Description:

The proposed project involves the replacement of Bridge No. 56 on NC 24 over Six Runs Creek in Sampson County (Refer to Figure 1). The existing bridge is 210 feet long and was built in 1956. The replacement structure will be approximately 250 feet long providing a minimum 32 feet of clear deck width. The replacement bridge will include two 12-foot lanes and 4-foot offsets. The bridge length is based on preliminary design information and is set by hydraulic requirements. The roadway grade of the new structure will be approximately the same as the existing structure.

The approach roadway will extend approximately 265 feet from the west end of the new bridge and 335 feet from the east end of the new bridge. The approaches will include a 24-foot pavement width, providing two 12-foot lanes. Two-foot paved shoulders and a total shoulder width of eight feet will be provided on each side (13-foot shoulders where guardrail is included).

## B. Description of Need and Purpose:

NCDOT Bridge Management Unit records from 2012 indicated Bridge No. 56 had a sufficiency rating of 8 out of a possible 100 for a new structure. The bridge is structurally deficient due to a substructure condition appraisal of 4 out of 9 according to Federal Highway Administration (FHWA) standards. The bridge also met the criteria for functionally obsolete due to a structural evaluation of 3 out of 9.

NCDOT made a series of repairs to the bridge the after 2012 inspection report. A 2016 report indicated Bridge No. 56 now has a sufficiency rating of 63.38 out a possible 100 for a new structure. The bridge is no longer considered structurally deficient or functionally obsolete due to the repairs made. However, due to the age of the bridge and the unknown life span of the repairs made, the need to replace the existing structure with a structure that meets current design standards remains.

## C. Categorical Exclusion Action Classification:

## D. Proposed Improvements

28. Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings, if the actions meet the constraints in 23 CFR 771.117(e)(1-6).

## E. Special Project Information:

#### Cost:

The proposed project is included in the 2018-2027 State Transportation Improvement Program (STIP). Right of way acquisition and construction are scheduled to begin for federal fiscal years 2019 and 2020, respectively. The estimated costs of the proposed project are as follows:

Right of Way: \$390,000 Construction: \$3,900,000 Total: \$4,290,000

Design:

Design Standards: AASHTO
Design Speed: 60 mph
Design Exceptions: None

Construction Type: Replace on new alignment

### **Estimated Traffic:**

AADT 2015: 5900 AADT 2040: 7600 TTST: 4% Dual: 8%

## **Bridge Demolition:**

Top-down method could be used for demolition of the existing Bridge No. 56.

#### **Alternatives Discussion:**

Two alternatives were studied for this project:

- 1. Replace Bridge No. 56 on existing alignment with a typical section of two 12-foot lanes and clear deck width of 32 feet. The roadway typical section would have two 12-foot lanes, 2-foot paved shoulders, and a total shoulder width of 8 feet.
- Replace Bridge No. 56 on new alignment north of the existing bridge with a typical section of two 12-foot lanes and clear deck width of 32 feet. The roadway typical section would have two 12-foot lanes, 2-foot paved shoulders, and a total shoulder width of 8 feet.

The first alternative was selected to avoid permanent impacts to jurisdictional wetlands. An onsite detour will be used during construction due to the unfavorable condition of the proposed offsite detour. The temporary bridge will be located south of the existing bridge.

## **Bicycle and Pedestrian Accommodations:**

This portion of NC 24 is not a part of a designated bicycle route. No temporary bicycle or pedestrian accommodations are required for this project.

## **Additional Agency Comments:**

The Sampson County EMS expressed concerns regarding the project due to its location in a high call volume area and NC 24 being a major route for responders.

An onsite detour will be used throughout the duration of the project.

### **Human Environment:**

Under NCDOT's programmatic agreement with the SHPO for bridge replacement projects, NCDOT reviewed the historic architecture and archaeological resources in the study area. The reviews concluded No Survey Required for both architectural and archaeological resources. The Archaeology Group submitted No Archaeological Survey Required forms on 2/22/2010 and 3/3/2015.

#### **Natural Environment:**

NCDOT performed habitat surveys for the red-cockaded woodpecker (*Picoides borealis*) and pondberry (*Lindera melissifolia*). The biological conclusion for both species was No Effect.

A Natural Resources Technical Report (NRTR) was prepared for this project in October 2015. At that time, the Wood Stork (*Mycteria Americana*) was listed as a federally threatened species and suitable habitat was deemed present in the study area. No individuals of wood stork or nest were observed during a foot survey on February 3, 2015 and a review of the NCNHP records indicated no occurrences within 1 mile of the study area. A biological conclusion of "May Affect – Not Likely to Adversely Affect" (MA-NLAA) was made by the biologist. Since that time, the Wood Stork has been delisted as a federally threatened species in Sampson County and the biological conclusion MA-NLAA conclusion is no longer warranted.

After the NRTR was completed in October 2015, the US Fish and Wildlife Service developed a programmatic biological opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the northern long-eared bat (NLEB) (*Myotis septentrionalis*) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The programmatic determination for NLEB for the NCDOT program is **May Affect**, **Likely to Adversely Affect**. The PBO provides incidental take coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Sampson County where B-4636 is located. This level of incidental take is authorized from the effective date of a final listing determination through April 30, 2020.

There were "No Effect" determinations for all other T/E species in Sampson County.

## **Impaired Waters:**

Six Runs Creek is a part of the Cape Fear River basin and can be classified C; Sw. The North Carolina 2014 303(d) list of impaired waters identifies no waters within the study area or within one mile of the study area as an impaired water due to sedimentation or turbidity.

#### **Required Permits:**

A Nationwide permit 3 will likely be required for impacts to "Waters of the United States" resulting from this project. Other permits that may apply include a NWP No. 12 for utility relocations.

In addition, an NCDWQ Section 401 Water Quality General Certification (GC) may be required prior to the issuance of a Section 404 Permit. Other required 401 certifications may include a GC 4133 for utility relocations. The USACE holds the final discretion as to what permit will be required to authorize project construction.

# F. Project Impact Criteria Checklists:

Type I &	II - Ground Disturbing Actions				
FHWA APPROVAL ACTIVITIES THRESHOLD CRITERIA					
If any of questions 1-7 are marked "yes" then the CE will require FHWA approval.					
1	Does the project require formal consultation with U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS)?				
2	Does the project result in impacts subject to the conditions of the Bald and Golden Eagle Protection Act (BGPA)?		$\boxtimes$		
3	Does the project generate substantial controversy or public opposition, for any reason, following appropriate public involvement?		$\boxtimes$		
4	Does the project cause disproportionately high and adverse impacts relative to low-income and/or minority populations?				
5	Does the project involve a residential or commercial displacement, or a substantial amount of right of way acquisition?		$\boxtimes$		
6	Does the project require an Individual Section 4(f) approval?		$\boxtimes$		
7	Does the project include adverse effects that cannot be resolved with a Memorandum of Agreement (MOA) under Section 106 of the National Historic Preservation Act (NHPA) or have an adverse effect on a National Historic Landmark (NHL)?				
If any of questions 8 through 31 are marked "yes" then additional information will be required for those questions in Section G.					
Other Considerations					
8	Does the project result in a finding of "may affect not likely to adversely affect" for listed species, or designated critical habitat under Section 7 of the Endangered Species Act (ESA)?	$\boxtimes$			
9	Is the project located in anadromous fish spawning waters?		$\boxtimes$		
Does the project impact waters classified as Outstanding Resource Water (ORW), High Quality Water (HQW), Water Supply Watershed Critical Areas, 303(d) listed impaired water bodies, buffer rules, or Submerged Aquatic Vegetation (SAV)?			$\boxtimes$		
11	Does the project impact waters of the United States in any of the designated mountain trout streams?		$\boxtimes$		
12	Does the project require a U.S. Army Corps of Engineers (USACE) Individual Section 404 Permit?		$\boxtimes$		
13	Will the project require an easement from a Federal Energy Regulatory Commission (FERC) licensed facility?		$\boxtimes$		
14	Does the project include a Section 106 of the NHPA effects determination other than a no effect, including archaeological remains?		$\boxtimes$		

ther C	onsiderations (continued)	Yes	No	
15	Does the project involve hazardous materials and/or landfills?		$\boxtimes$	
16	Does the project require work encroaching and adversely affecting a regulatory floodway or work affecting the base floodplain (100-year flood) elevations of a water course or lake, pursuant to Executive Order 11988 and 23 CFR 650 subpart A?			
17	Is the project in a Coastal Area Management Act (CAMA) county and substantially affects the coastal zone and/or any Area of Environmental Concern (AEC)?		$\geq$	
18	Does the project require a U.S. Coast Guard (USCG) permit?		$\geq$	
19	Does the project involve construction activities in, across, or adjacent to a designated Wild and Scenic River present within the project area?		×	
20	Does the project involve Coastal Barrier Resources Act (CBRA) resources?		$\geq$	
21	Does the project impact federal lands (e.g. U.S. Forest Service (USFS), USFWS, etc.) or Tribal Lands?		$\geq$	
22	Does the project involve any changes in access control?		$\geq$	
23	Does the project have a permanent adverse effect on local traffic patterns or community cohesiveness?		×	
24	Will maintenance of traffic cause substantial disruption?		$\triangleright$	
25	Is the project inconsistent with the STIP or the Metropolitan Planning Organization's (MPO's) Transportation Improvement Program (TIP) (where applicable)?		$\geq$	
26	Does the project require the acquisition of lands under the protection of Section 6(f) of the Land and Water Conservation Act, the Federal Aid in Fish Restoration Act, the Federal Aid in Wildlife Restoration Act, Tennessee Valley Authority (TVA), or other unique areas or special lands that were acquired in fee or easement with public-use money and have deed restrictions or covenants on the property?		×	
27	Does the project involve Federal Emergency Management Agency (FEMA) buyout properties under the Hazard Mitigation Grant Program (HMGP)?		$\geq$	
28	Does the project include a <i>de minimis</i> or programmatic Section 4(f)?		$\geq$	
29	Is the project considered a Type I under the NCDOT's Noise Policy?		$\geq$	
30	Is there prime or important farmland soil impacted by this project as defined by the Farmland Protection Policy Act (FPPA)?		×	
31	Are there other issues that arose during the project development process that affected the project decision?		$\geq$	

## G. Additional Documentation as Required from Section F

**Response to Question 8:** A Natural Resources Technical Report (NRTR) was prepared for this project in October 2015. At that time, the Wood Stork (*Mycteria Americana*) was listed as a federally threatened species and suitable habitat was deemed present in the study area. No individuals of wood stork or nest were observed during a foot survey on February 3, 2015 and a review of the NCNHP records indicated no occurrences within 1 mile of the study area. A biological conclusion of "May Affect – Not Likely to Adversely Affect" (MA-NLAA) was made by

the biologist. Since that time, the Wood Stork has been delisted as a federally threatened species in Sampson County and the biological conclusion MA-NLAA conclusion is no longer warranted.

The US Fish and Wildlife Service has developed a programmatic biological opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the northern long-eared bat (NLEB) (*Myotis septentrionalis*) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The programmatic determination for NLEB for the NCDOT program is **May Affect, Likely to Adversely Affect**. The PBO provides incidental take coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Sampson County where B-4636 is located. This level of incidental take is authorized from the effective date of a final listing determination through April 30, 2020.

## H. <u>Project Commitments</u>

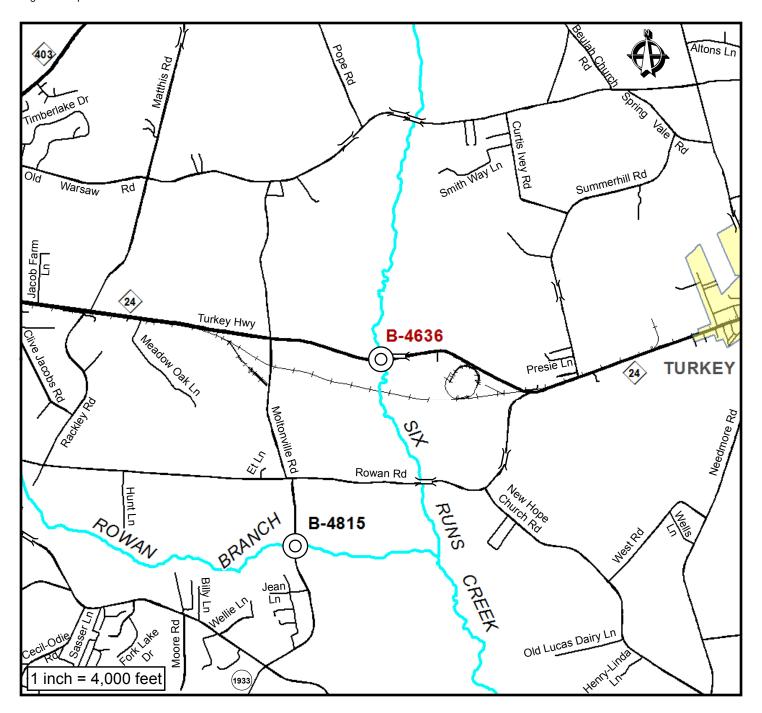
Sampson County
Bridge No. 56 over Six Runs Creek
on NC 24
TIP Project No. B-4636
State Project No. 38447.1.FS2

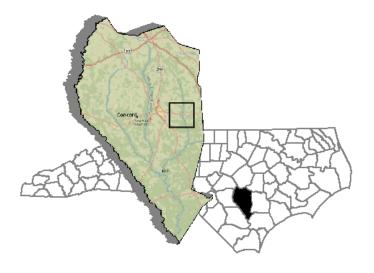
#### **Division Construction-FEMA**

This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structure(s) and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

## I. <u>Categorical Exclusion Approval</u>

STIP Project N	o. <b>B-4636</b>
WBS Element	38447.1.FS2
Federal Project	No. <b>N/A</b>
Prepared By:	DocuSigned by:
4/1/2019	Brittney Kelly
Date	Brittney D. Kelly, PE, Planning Engineer  Dewberry
Prepared For:	North Carolina Department of Transportation
Reviewed By:	
4/1/2019	Docusigned by:  Mason Hemdon
Date	Mason Herndon, Division 3 Environmental Officer North Carolina Department of Transportation
Approve	If all of the threshold questions (1 through 7) of Section F are answered "no," NCDOT approves this Categorical Exclusion.
Certified	If any of the threshold questions (1 through 7) of Section F are answered "yes," NCDOT certifies this Categorical Exclusion.
4/1/2019	DocuSigned by:
Date	David Stutts, PE North Carolina Department of Transportation
	For Projects Certified by NCDOT (above), FHWA signature required.
Date	John F. Sullivan, III, PE, Division Administrator Federal Highway Administration







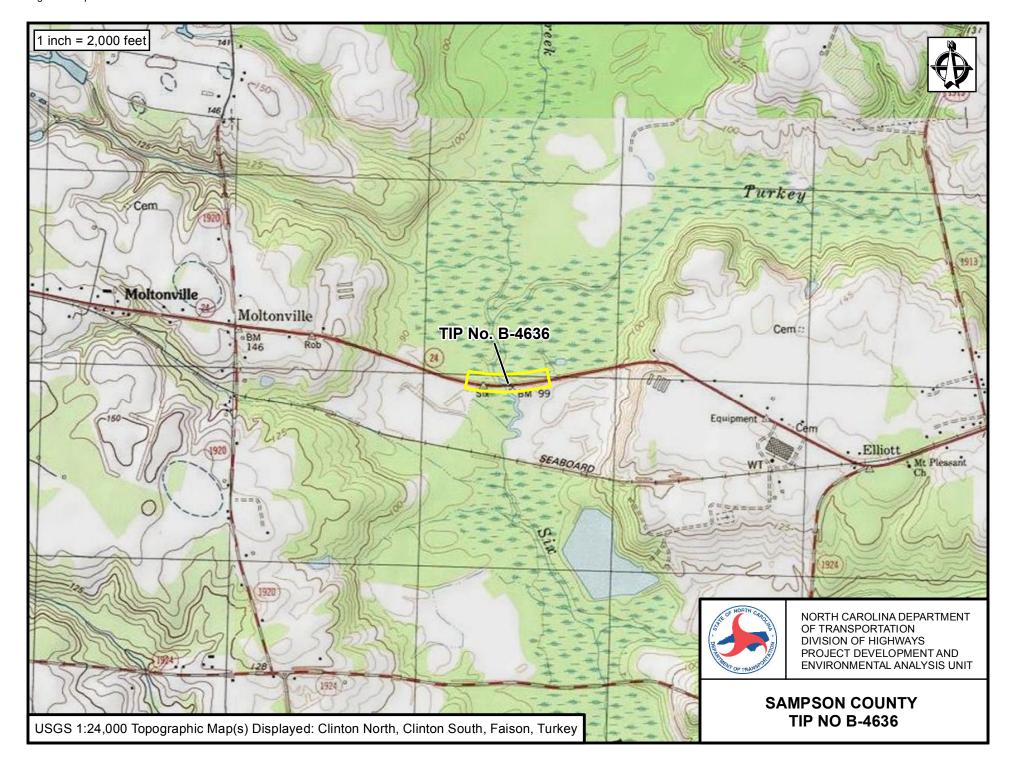
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT

## **SAMPSON COUNTY**

REPLACE BRIDGE NO. 56 ON NC 24 OVER SIX RUNS CREEK B-4636

FIGURE 1 VICINITY MAP







## STIP B-4636, Bridge No. 56 over Six Runs Creek on NC 24 in Sampson County



RIGHT SIDE OF BRIDGE NO. 56, FACING WEST



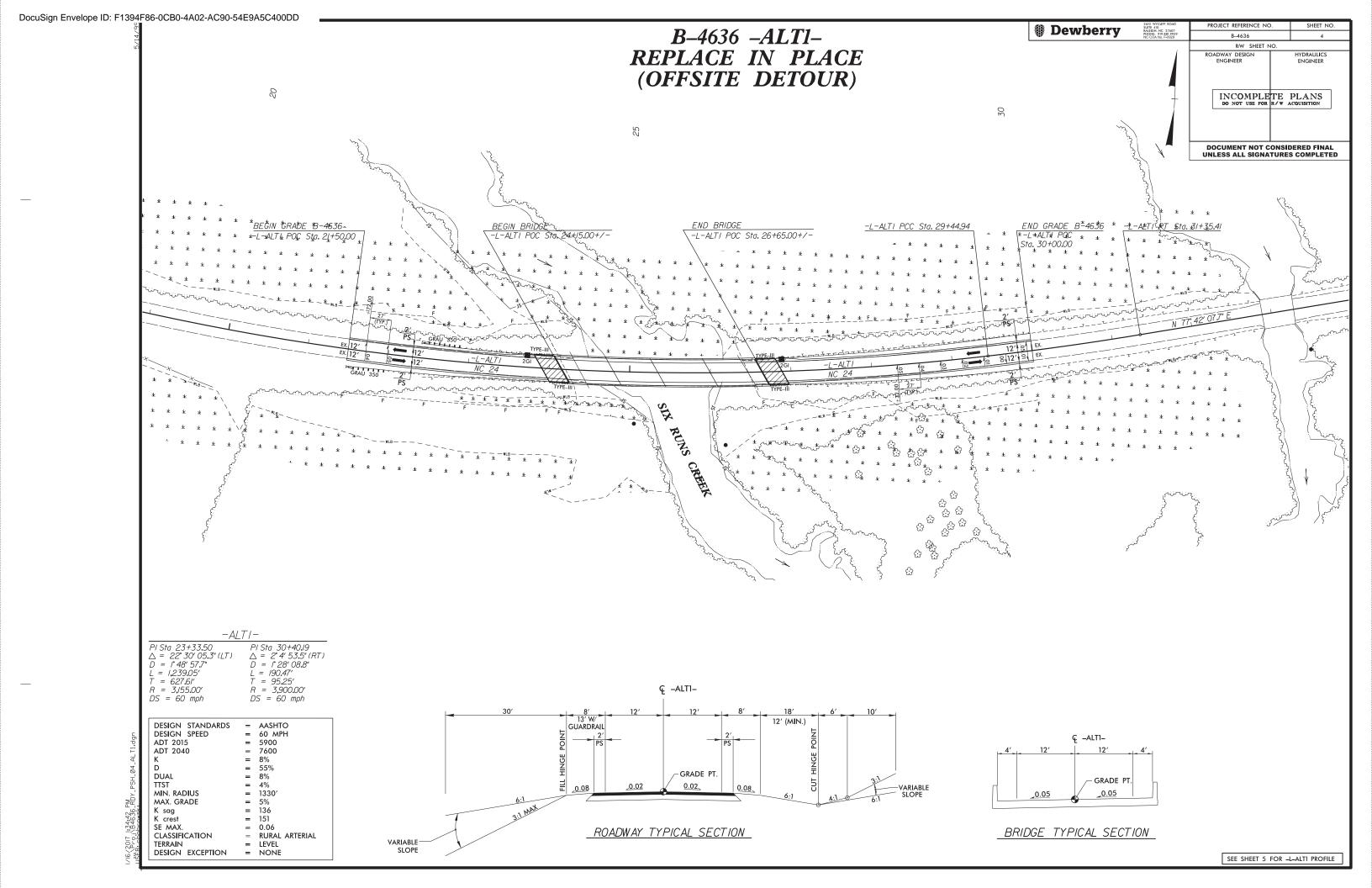
RIGHT SIDE OF BRIDGE NO. 56, FACING EAST

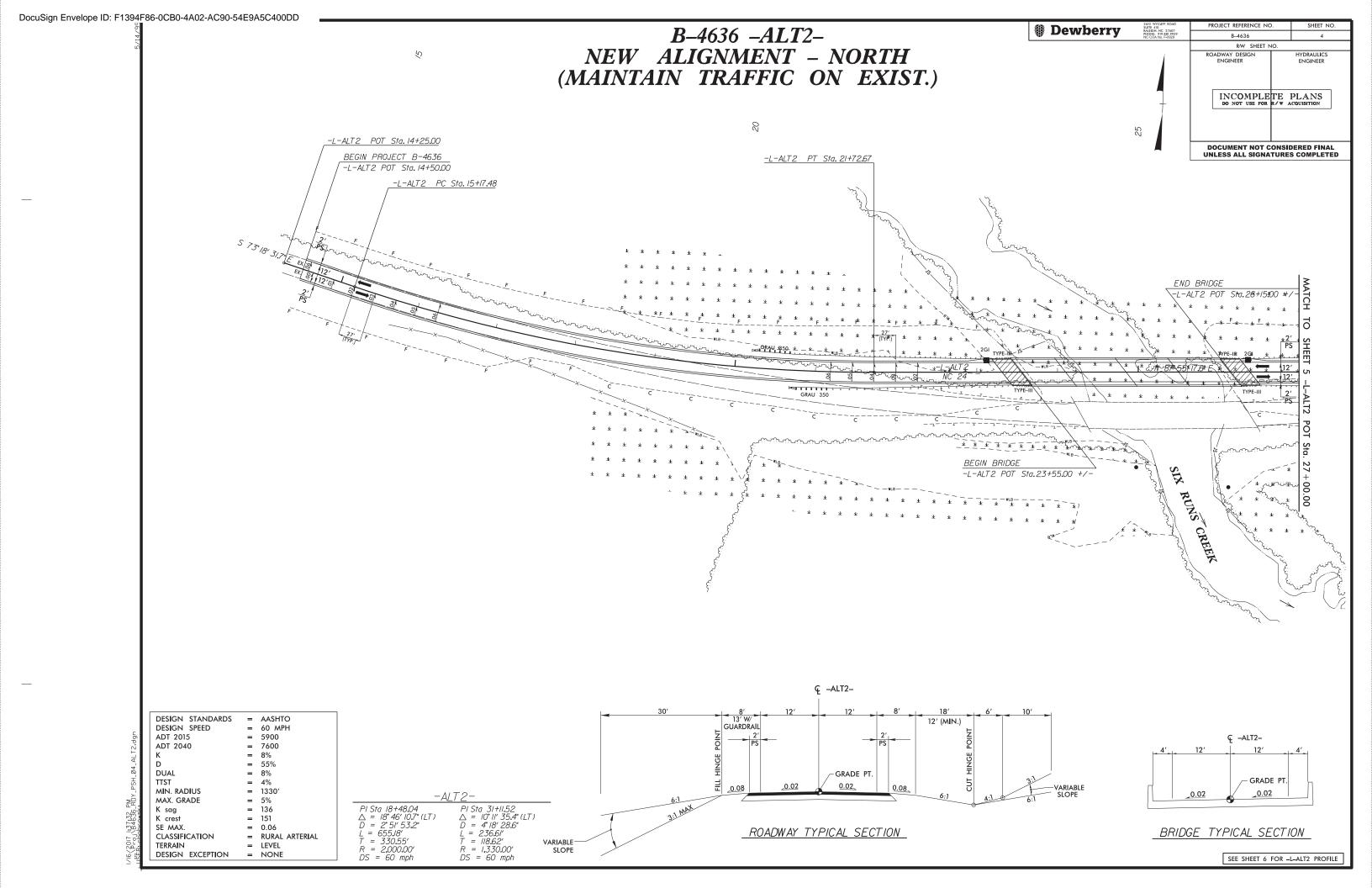


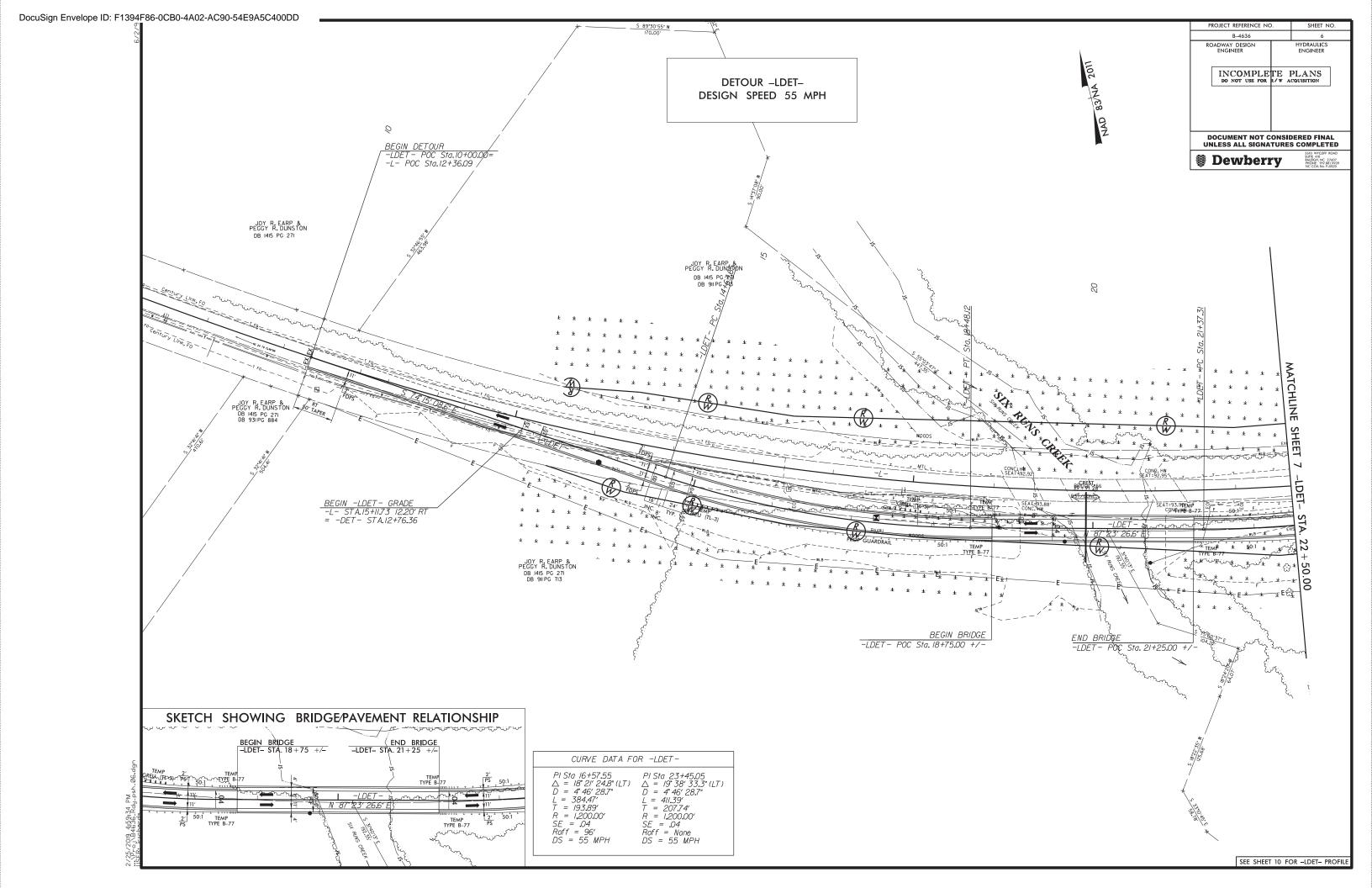
FACING SOUTH FROM BRIDGE NO. 56



FROM EAST, VIEW OF BRIDGE NO. 56







10-01-0006 update



## HISTORIC ARCHICTECTURE AND LANDSCAPES NO SURVEY REQUIRED FORM

This form only pertains to Historic Architecture and Landscapes for this project. It is not valid for Archaeological Resources. You must consult separately with the Archaeology Group.

	PROJEC	CT INFORMATIO	ON		
Project No:	B-4636	County:	Sampson		
WBS No.:	38447.1.FS2	Document Type:	PCE		
Fed. Aid No:	BRNHS-0024(69)	Funding:	☐ State ☐ Federal		
Federal Permit(s):	⊠ Yes □ No	Permit Type(s):	unknown		
Project Description Replace Bridge	tion: No. 56 over Six Runs Creek	c on NC 24.			
SUMMA	RY OF HISTORIC ARCI	HICTECTURE A	ND LANDSCAPES REVIEW		
quad maps, releve April 14, 2015. The why the availage are no unident area: Using HPO GIS the structures in the structure in the structures in the structures in the structure in the structures	ant background reports, historical here are no structures in the explicit ble information provides a sified significant historic and website and Sampson County	oric designations ro expanded project area a reliable basis for architectural or la y ArcGIS website prolities are considered	ince been expanded. Review of HPO ster, and indexes was undertaken on No survey is required.  Treasonably predicting that there indscape resources in the project ovides reliable information regarding valid for the purposes of determining		
	SUPPORT	T DOCUMENTAT	TION		
⊠Map(s)	Previous Survey Info.	⊠Photos □	Correspondence Design Plans		
	FINDING BY NCDOT	ARCHITECTUR	RAL HISTORIAN		
Historic Archite	cture and Landscapes NO	SURVEY REQU	RED		
Sulla NCDOT Archite	Clap  Cotural Historian		April 15, 2015  Date		

10-01-0006

# NO SURVEY REQUIRED FORM

PROJECT IN	FORMATION			
Project No:	B-4636	County:	Sampson	
WBS No:	38447.1.1	Document:	CE	
F.A. No:	BRNHS-24(27)	Funding:	State	
Federal (USAC	CE) Permit Required? 🛛 🖂	Yes 🗌 No Permit	Type: Nation	nwide
(A.P.E.) is approx	otion:Replace Bridge No.56 o roximately 488 meters (1,600 244 meters (800 feet) of roads	feet) long and 37 meters	s (120 feet) wide	
SUMMARY C	OF CULTURAL RESOURC	ES REVIEW		
Review consist aerial photogra	on of review activities, results ed of archaeological backgrouph of the A.P.E. The A.P.E. It Clinton Bypass survey in Cum	and research and examinate been previously surv	nation of topogra reyed for archae	ological sites as part
that there are n The A.P.E. was and Sampson C Creek approxin	con of why the available information unidentified historic propers included in the survey for the counties (Botwick 2003). The nately 215 meters (705 feet) so 24 was described as drained was	ties in the APE: e proposed improvemen survey identified site 3 outh of NC 24 (Botwick	ts to NC 24 in C 1SP343 on the v 2003:178-181)	Cumberland, Duplin west side of Six Runs . The area around the
SUPPORT DO	OCUMENTATION			
See attached:	<ul><li></li></ul>		Photos	Correspondence
FINDING BY NO SURVEY I	NCDOT CULTURAL RESOREQUIRED	OURCES PROFESSIO	ONAL	

Caleb Smith

2/22/2010

NCDOT Cultural Resources Specialist

Date

10-01-0006



#### NO ARCHAEOLOGICAL SURVEY REQUIRED FORM

This form only pertains to ARCHAEOLOGICAL RESOURCES for this project. It is not valid for Historic Architecture and Landscapes. You must consult separately with the Historic Architecture and Landscapes Group.



#### PROJECT INFORMATION

Project No:	B-4636	County:	Sampson	
WBS No:	38447.1.FS2	Document:	PCE OR C	E
F.A. No:	BRNHS-0024(69)	Funding:	☐ State	
Federal Permit Requ	uired? Xes	☐ No Permi	t Type: N/A	

**Project Description:** A revision to the proposal to replace Bridge No. 0056 on NC 24 over Six Runs Creek in Sampson County has been forwarded to our attention. The original review was dated 12-17-2009. The current design has not been finalized. Both on site and off site detours are being considered for this project, now, and so the project study area has expanded in width from 120 feet to 300 feet, allowing for several design options. The project length has been refined, and is now a shorter 1400 feet, down from the original 4000 feet proposed in the 2009 request to review for archaeology. For this update, the APE is now defined as 1400 ft along NC 24, centered on Bridge No. 0056, and having a maximum width of 300 feet near the bridge, tapering inward as the project limits are reached on NC 24. A large portion of the APE is already heavily disturbed by the existing facility. This is a federally funded and permitted project and is subject to Section 106 of the NHPA for cultural resources compliance.

#### SUMMARY OF CULTURAL RESOURCES REVIEW

#### Brief description of review activities, results of review, and conclusions:

This is a federally funded project; Section 106 applies regarding archaeological resources. A visit was arranged to the Office of State Archaeology to review archaeological site location maps and to reference site and report files as needed. There are no properties determined eligible for or listed on the National Register of Historic Places within or nearby the project APE. The current study area was included as part of an archaeological survey for NC 24 and considered high probability for containing archaeological sites. As a result of that survey no archaeological resource was identified within the APE for this current project, though a Native American site was documented as part of that study 200 meters southwest of Bridge No. 0056 (Botwick 2003; 178-181). The site, not recommended eligible for listing on the National Register of Historic places, is outside of the current APE and will not be affected by the bridge replacement project. A large portion of the APE has already been graded and disturbed during the construction and maintenance of the existing roadway and bridge.

# Brief Explanation of why the available information provides a reliable basis for reasonably predicting that there are no unidentified historic properties in the APE:

As a replacement to an existing facility, much of the APE soils have already been modified during the previous bridge and road construction using heavy equipment. There are no known archaeological site or other resources identified as listed in or eligible for the National Register of Historic Places resources. A previous archaeological survey noted the area as high probability for archaeological sites and it, therefore, received a more intensive site identification method. However, no sites were identified within or adjacent to the current APE. Additional survey work, including subsurface testing methodology, is unlikely to result in the discovery of a newly identified, significant archaeologal site. Being that this is a federal undertaking, the project falls under Section 106 compliance. As there are no known resources and the likelihood of affecting intact, significant archaeological sites is low, this project is compliant with Section 106 and no further archaeological work is recommended.

SUPPORT DOCUMENTATION				10-01-0006	
See attached:	Map(s)	Previous Survey Info	Photos	Correspondence	
FINDING BY NCDOT ARCHAEOLOGIST					
NO ARCHAEOLOGY SURVEY REQUIRED					
Bural.	Mut.			March 3, 2015	
NCDOT ARC	HAEOLOGIST	II		Date	



# **■ North Carolina Wildlife Resources Commission**

Gordon Myers, Executive Director

#### **MEMORANDUM**

TO: Chris Rivenbark

NCDOT, Nature Environment Section

FROM: Travis Wilson, Highway Project Coordinator

**Habitat Conservation Program** 

DATE: January 30, 2015

SUBJECT: 2015 Bridge Replacements

Biologists with the N. C. Wildlife Resources Commission (NCWRC) have reviewed the information provided and have the following preliminary comments on the subject project. Our comments are provided in accordance with provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

Our standard recommendations for bridge replacement projects of this scope are as follows:

- 1. We generally prefer spanning structures. Spanning structures usually do not require work within the stream and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges allows for human and wildlife passage beneath the structure, does not block fish passage, and does not block navigation by canoeists and boaters.
- 2. Bridge deck drains should not discharge directly into the stream.
- 3. Live concrete should not be allowed to contact the water in or entering into the stream.
- 4. If possible, bridge supports (bents) should not be placed in the stream.
- 5. If temporary access roads or detours are constructed, they should be removed back to original ground elevations immediately upon the completion of the project. Disturbed areas should be seeded or mulched to stabilize the soil and native tree species should be planted with a spacing of not more than 10'x10'. If possible, when using temporary

Mailing Address: Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721 **Telephone:** (919) 707-0220 • **Fax:** (919) 707-0028

Bridge Memo Page 2 January 30, 2015

- structures the area should be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact, allows the area to revegetate naturally and minimizes disturbed soil.
- 6. A clear bank (riprap free) area of at least 10 feet should remain on each side of the steam underneath the bridge.
- 7. In trout waters, the N.C. Wildlife Resources Commission reviews all U.S. Army Corps of Engineers nationwide and general '404' permits. We have the option of requesting additional measures to protect trout and trout habitat and we can recommend that the project require an individual '404' permit.
- 8. In streams that contain threatened or endangered species, NCDOT biologist should be notified. Special measures to protect these sensitive species may be required. NCDOT should also contact the U.S. Fish and Wildlife Service for information on requirements of the Endangered Species Act as it relates to the project.
- 9. In streams that are used by anadromous fish, the NCDOT official policy entitled "Stream Crossing Guidelines for Anadromous Fish Passage (May 12, 1997)" should be followed.
- 10. Sedimentation and erosion control measures sufficient to protect aquatic resources must be implemented prior to any ground disturbing activities. Structures should be maintained regularly, especially following rainfall events.
- 11. Temporary or permanent herbaceous vegetation should be planted on all bare soil within 15 days of ground disturbing activities to provide long-term erosion control.
- 12. All work in or adjacent to stream waters should be conducted in a dry work area. Sandbags, rock berms, cofferdams, or other diversion structures should be used where possible to prevent excavation in flowing water.
- 13. Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams.
- 14. Only clean, sediment-free rock should be used as temporary fill (causeways), and should be removed without excessive disturbance of the natural stream bottom when construction is completed.
- 15. During subsurface investigations, equipment should be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.

If corrugated metal pipe arches, reinforced concrete pipes, or concrete box culverts are used:

1. The culvert must be designed to allow for aquatic life and fish passage. Generally, the culvert or pipe invert should be buried at least 1 foot below the natural streambed (measured from the natural thalweg depth). If multiple barrels are required, barrels other than the base flow barrel(s) should be placed on or near stream bankfull or floodplain bench elevation (similar to Lyonsfield design). These should be

reconnected to floodplain benches as appropriate. This may be accomplished by utilizing sills on the upstream and downstream ends to restrict or divert flow to the base flow barrel(s). Silled barrels should be filled with sediment so as not to cause noxious or mosquito breeding conditions. Sufficient water depth should be provided in the base flow barrel(s) during low flows to accommodate fish movement. If culverts are longer than 40-50 linear feet, alternating or notched baffles should be installed in a manner that mimics existing stream pattern. This should enhance aquatic life passage: 1) by depositing sediments in the barrel, 2) by maintaining channel depth and flow regimes, and 3) by providing resting places for fish and other aquatic organisms. In essence, base flow barrel(s) should provide a continuum of water depth and channel width without substantial modifications of velocity.

- 2. If multiple pipes or cells are used, at least one pipe or box should be designed to remain dry during normal flows to allow for wildlife passage.
- 3. Culverts or pipes should be situated along the existing channel alignment whenever possible to avoid channel realignment. Widening the stream channel must be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.
- 4. Riprap should not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be professionally designed, sized, and installed.

In most cases, we prefer the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure should be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed down to the natural ground elevation. The area should be stabilized with grass and planted with native tree species. If the area reclaimed was previously wetlands, NCDOT should restore the area to wetlands. If successful, the site may be utilized as mitigation for the subject project or other projects in the watershed.

#### Project specific comments:

B-4453 Camden County bridge number 19 on SR 1235 over UT: Anadromous species are found in this tributary. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to June 30. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4648 Tyrrell County bridge number 17 on SR 1105 over Riders Creek: Anadromous species are found in this portion of Riders Creek. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to June 30. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5416 Perquimans County bridge number 29 on SR 1200 over a branch of Perquimans River: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5503 Martin County bridge number 53 on SR 1142 over Collie Swamp: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5507 Chowan County bridge numbers 24,20, and 21 on NC 32 over Warwick Swamp, Dillard Creek, and Sand Run Creek: Anadromous species are found in these tributaries. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to June 30. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5508 Hyde County bridge number 21 on SR 1311 over Waupopin Canal: Anadromous species are found in this portion of Waupopin Canal. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to June 30. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5605 Hertford County bridge number 31 on US 13 over railroad: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4425 Beaufort County bridge number 69 on SR 1136 over a Branch of Chocowinity Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4427 Beaufort County bridge number 6 on SR 1422 over Big Swamp: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4430 Beaufort County bridge number 135 on SR 1742 over Bath Creek: Bath Creek is designated as a Primary Nursery Area. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to September 30. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4483 Craven County bridge number 66 on SR 1232 over Grape creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4595 Pamlico County bridge number 14 on SR 1005 over Beard Creek: Anadromous species are found in this portion of Beard Creek. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to June 30. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4596 Pamlico County bridge number 28 on SR 1005 over Fork of Beard Creek: Anadromous species are found in this portion of Beard Creek. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to June 30. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4485 Craven County bridge number 26 on SR 1621 over Beaver Dam Swamp: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4527 Greene County bridge number 26 on SR 1705 over Bear Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4569 Lenoir County bridge number 68 on SR 1515 over Groundnut Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4593 Pamlico County bridge number 38 on NC 55 over Trent Creek: Anadromous species are found in this portion of Trent Creek. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to June 30. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4414 Beaufort County bridge number 43 on US 264 over Pungo Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4433 Beaufort County bridge number 40 on SR 1932 over Horse Pen Swamp: Anadromous species are found in this portion of Horse Pen Swamp. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to June 30. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4605 Pitt County bridge number 5 on SR 1777 over Chicod Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4606 Pitt County bridge number 17 on SR 1780 over Chicod Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4607 Pitt County bridge number 43 on SR 1923 over Swift Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4709 Beaufort County bridge number 14 on SR 1932 over Branch Durham Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4786 Pitt County bridge number 38 on US 13 over Tar River: Tar River at this location is designated as a Primary Nursery Area. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to September 30. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4438 Brunswick County bridge number 47 on NC 211 over Branch of Juniper Creek: Juniper Creek Game Land is located within the project study area, DOT should coordinate closely with NCWRC during the design and construction of this project to avoid and minimize impacts to this area. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4590 New Hanover County bridge number 29 on NC 133 over Smith Creek: Anadromous species are found in this portion of Smith Creek. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February

15 to June 30. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4928 Brunswick County bridge number 28 on SR 1432 over Mill Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5311 Brunswick County bridge number 104 on SR 1500 over Middel Swamp: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5540 Brunswick County bridge number 202 on SR 1357 over Branch of Shallotte River: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4501 Duplin County bridge number 325 on SR 1004 over Branch of NE Cape Fear River: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4502 Duplin County bridge number 144 on SR 1704 over Panther Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5534 Duplin County bridge number 82 on NC 111 over Burnt Coat Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4635 Sampson County bridge number 9 on US 13 over South River overflow: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4636 Sampson County bridge number 56 on NC 24 over Six Runs Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4638 Sampson County bridge number 195 on SR 1703 over Merkle Swamp: The North Carolina Ecosystem Enhancement Program (EEP), Great Coharie Tract is located within the project study area, DOT should coordinate closely with EEP during the design and construction of this project to avoid and minimize impacts to this area. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4813 Sampson County bridge number 18 on SR 1004 over Crane Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4815 Sampson County bridge number 3 on SR 1933 over Beaver Dam Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5308 Sampson County bridge number 152 on SR 1455 over Caesar Swamp: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5310 Sampson County bridge number 188 on SR 1817 over Ward Swamp: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4844 Wayne/Duplin County bridge number 117 on SR 1502 over NE Cape Fear River: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4839 Wayne County bridge number 96 on SR 1006 over Thoroughfare Swamp: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4840 Wayne County bridge number 264 on SR 1117 over Thunder Swamp: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4842 Wayne County bridge number 45 on SR 1353 over Great Swamp: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4935 Halifax County bridge number 120 on SR 1003 over Branch of Deep Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4940 Wayne County bridge number 25 on SR 157 over Exum Mill Branch: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4941 Wayne County bridge number 93 on SR 1009 over Town Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4942 Wayne County bridge number 121 on SR 1702 over West Bear Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4937 Johnston County bridge numbers 118 and 119 on I-95 over CSX Railroad: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-4479 Columbus County bridge numbers 222, 226, 228, and 230 on SR 1700 over Red Hill Swamp: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5505 Harnett County bridge number 151 on SR 1415 over Hectors Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5511 Robeson County bridge number 399 on SR 1741 over Big Marsh Swamp: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5513 Harnett County bridge number 72 on SR 2045 over Anderson Creek: We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5529 Robeson County bridge number 434 on SR 1003 over Back Swamp: We recommend replacing this bridge with a bridge. Standard recommendations apply.

If you need further assistance or information on NCWRC concerns regarding bridge replacements, please contact me at (919) 707-0370. Thank you for the opportunity to review and comment on this project.